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# Religious prohibitions against usury<sup>☆</sup>

Clyde G. Reed<sup>a,1</sup> and Cliff T. Bekar<sup>b,\*</sup>

<sup>a</sup> *Department of Economics, Simon Fraser University, Burnaby, BC, Canada V5K 2Y4*

<sup>b</sup> *Department of Economics, Lewis and Clark College, 0615 SW Palatine Hill Road,  
Portland, OR 97219-7899, USA*

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## Abstract

Roman Catholic usury prohibitions created an explicit negative “tie-in” between salvation and consumption lending at interest. We view the prohibitions as a response to severe consumption smoothing problems created by the substitutability of capital market transactions for traditional smoothing mechanisms—informal pooling and charity. We demonstrate consistency between our model and the broad features of the Roman Catholic chronology of prohibitions.

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## 1. Introduction

Why do religions prohibit usury? From a non-historical perspective, interest rate policy might seem an unlikely candidate for inclusion as a central tenet of religious doctrine. Yet history is replete with examples: Vedic India, Judaism (from the fifth century BC to the 20th century), Roman Catholicism (from the 12th century to the 19th century), and Islam (from the seventh century to the present). Our focus

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\* Corresponding author. Fax: +503-768-7612.

E-mail addresses: [reed@sfu.ca](mailto:reed@sfu.ca) (C.G. Reed), [bekar@lclark.edu](mailto:bekar@lclark.edu) (C.T. Bekar).

<sup>1</sup> Fax: 1-604-291-4519.

is on the Roman Catholic case. As potential barriers to economic development in traditional societies, these prohibitions deserve attention as they impose high costs by constraining or eliminating the capital market.

We propose an economic explanation of Roman Catholic usury prohibitions that combines elements of the theory of the firm and industrial organization with recent research on reciprocal exchange and informal income pooling. The analysis views usury prohibitions as a response to a consumption smoothing problem. It contains three essential elements: the role of charity and informal pooling in providing economy-wide consumption smoothing and averting social/economic crises, the substitutability of capital market transactions for charity and informal pooling in smoothing consumption, and the Church's use of usury prohibitions to create a negative tie-in between salvation and consumption lending at interest. We find that when pooling and charity are the principal consumption smoothing devices available to a significant portion of the population, and when the effectiveness of pooling and charity is threatened by the alternative of the capital market, the Church rails against usury. When pooling and charity are not essential for consumption smoothing, or when the capital market does not threaten pooling and charity, the Church pays little or no attention to usury. Our "tie-in" approach to understanding usury prohibitions stresses the positive relationship between improved consumption smoothing for the poor, the Church's religious mission, and the value of Church landholdings. We confront the entire chronology of Roman Catholic prohibitions and view the prohibitions from the perspective of Church rhetoric in which the stated goal was to eliminate the *existence* of the capital market. This latter interpretation is critical to our analysis and contrasts sharply with recent work (discussed below) that views the purpose of the prohibitions as reducing interest rates in functioning capital markets.<sup>2</sup>

Ekelund et al. (1989)<sup>3</sup> proposed a rent seeking model of the Roman Catholic prohibitions: the Church was a net borrower and therefore desired low interest rates; the Church was also a lender and used usury prohibitions to restrict competition. The first of these assertions appears at odds with historical scholarship that suggests that the Church was, on average, a net lender, and considers usury prohibitions harmful to the financial interests of prominent Church supporters.<sup>4</sup> In addition, the notion that the Church adopted usury prohibitions to monopolize the loan market is inconsistent with the fact that usury restrictions were placed (and enforced) on clergy.<sup>5</sup> Finally, Ekelund et al. did not provide the detailed evidence on Church borrowing

<sup>2</sup> A strong case can be made that the prohibitions, in all likelihood, resulted in increased interest rates (relative to levels that would have been observed in the absence of Church intervention). Inflamed Church rhetoric and threats motivated some lenders to exit the capital market and also led to the substitution of less efficient contractual arrangements. The reduced supply of loanable funds and higher transaction costs would raise, not lower, interest rates. From Noonan (1957, p. 195): "Probably the chief economic result of the prohibition was to restrain conscientious Christians from entering the small-loan market and to stimulate a greater use of risk-sharing investments than might otherwise have occurred." See also the discussion in Munro (2001).

<sup>3</sup> See also Ekelund et al. (1996).

<sup>4</sup> Noonan (1957, p. 14).

<sup>5</sup> Glaeser and Scheinkman (1998, p. 24).

and lending that their argument requires in order to demonstrate consistency with the chronology of usury prohibitions.<sup>6</sup>

Posner (1995) framed his analysis within the context of a welfare state. When the state provides an income floor, the poor, protected from downside risk, will have an incentive to engage in risky investments, financed in part by borrowed funds. The result will be excessive welfare pay-outs. Usury prohibitions partially correct the problem through differential credit rationing. Lower than market interest rates have been shown to result in minimal credit rationing to the wealthy, but severe credit rationing to the poor. Given that the Church was a provider of welfare, Posner's analysis offers an answer to the question of why the Church might have been willing to incur the costs of restricting interest charges, especially in the 13th century—a period of wide-spread poverty. The analysis also implies, however, that the Church, contrary to observed behavior, should not have required a zero rate of interest since this results in the denial of credit to both wealthy and poor borrowers. A more fundamental difficulty is that the causes of poverty in the Middle Ages appear unrelated to overly risky investments and were, in large part, due to “illness, accidents, premature death of bread-winners, fire, robbery, pillage in war, natural disasters, and bad weather” (Dyer, 1989, p. 234).<sup>7</sup> While the spirit of Posner's analysis is reflected in Church rhetoric in the later Middle Ages, which increasingly stressed the distinction between the deserving and undeserving poor, this change in attitude came at a time when the enforcement of usury prohibitions were being relaxed rather than strengthened.

Glaeser and Scheinkman's (1998) paper is closest to our analysis. They also focus on the implications of usury prohibitions for consumption smoothing. But while we motivate the prohibitions by the Church's self-interested behavior, Glaeser and Scheinkman explained them as the solution to a social welfare problem. They posited two types of agents, rich and poor. Both types live for three periods. In period one, agents decide communally on a maximum interest rate that can be charged on loans in period two. In period two, agent types are revealed and endowments are either loaned or consumed. In the third period, loans are repaid, endowments are consumed, and agents perish. Preferences are identical over agents and exhibit declining marginal utility of consumption. Conditional on the supply of loanable funds being sufficiently inelastic, social welfare will be enhanced if the rich are required to lend to the poor at less than market rates of interest. In effect, usury prohibitions serve to reallocate income from states of the world where it has a relatively low marginal utility to states where it has a relatively high marginal utility. An initial problem is that of generating the prediction of a zero interest rate policy. Glaeser and Scheinkman simulated social welfare optimizing interest rates less than market rates, but still well above zero.<sup>8</sup> Grain storage could have lowered the optimal interest rate to zero. But there is little evidence of grain storage in the 13th and

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<sup>6</sup> See Glaeser and Scheinkman (1998, pp. 25–26) who argue that the rent seeking model is not supported by the chronology.

<sup>7</sup> See also the discussion in Miller and Hatcher (1978, pp. vii–x).

<sup>8</sup> Glaeser and Scheinkman (1996).

early 14th centuries,<sup>9</sup> the period in which a zero interest rate restriction was most vigorously enforced. Another difficulty is the lack of an explanation for why the Church was the instrument of “optimal” interest rate policy. Also missing is an explanation for the history of prohibitions before the 12th century and after the 15th century. A more fundamental problem is that the poor were, for the most part, excluded from participation in the private capital market, with little evidence in the historical record of loans at interest from rich to poor.<sup>10</sup>

## 2. Roman Catholic prohibitions

The Roman Catholic prohibition on usury can be partitioned into six phases.

*Period 1: 500–1050.* The prohibitions were primarily applied to clerics. Usury itself was poorly defined. “At no time was it said that usury was a sin against justice, nor was restitution of usuries prescribed as an obligation of justice. . .while the taking of usury was treated as a serious sin, it was denounced as a form of avarice or uncharitableness.”<sup>11</sup>

*Period 2: 1050–1175.* Usury was declared a sin prohibited by the Old and New Testaments. All interest rates greater than zero were considered usurious. Even the *desire* for a return beyond the good itself was declared sinful. Usuries were required to be restored in full before salvation was possible. Higher prices for credit sales were declared implicit usury.

*Period 3: 1175–1350.* Usury became an important concern of the Church. The peak of the ecclesiastical attack was reached at the Council of Lyon in 1274 and the Council of Vienne in 1312. Punishments for usury included refusal of confession, absolution, and Christian burial; invalidation of wills; and excommunication of rulers and magistrates of states or communities which permitted usury. The prohibitions targeted consumption loans. Although social policy was not a primary argument in Scholastic writings and Church rhetoric attacked all forms of usury, we argue that this is a reasonable inference from two observations. First, the only individuals or groups singled out by the Church for public denunciation and punishment were lenders dealing primarily in consumption loans.<sup>12</sup> Second, usury prohibitions restricted the flow of loanable funds into consumption lending, but not into other uses.<sup>13</sup> Noonan (1957, p. 192) commented that:

<sup>9</sup> McCloskey and Nash (1984).

<sup>10</sup> Support for this assertion is presented in a later section (“Usury and Consumption Smoothing”).

<sup>11</sup> Noonan (1957, pp. 16–17).

<sup>12</sup> Noonan (1957, p. 191) wrote “. . . manifest usury, entailing excommunication and social disgrace, was charged only against those publicly setting themselves up to lend money at profit, who made moneylending their trade. . .judicial measures were taken only against the Lombards and Jews.”

<sup>13</sup> Noonan (1957, p. 195). De Roover (1948, pp. 48–83) comments extensively on the wide-spread use of bills of exchange by merchant bankers to circumvent usury prohibitions on investment loans. In contrast, there were no methods of circumvention permitted by the Church for consumption loans.

It seems exceedingly difficult to believe that virtually the whole capitalistic class of every medieval city would have habitually committed sins of usury by participating in either exchange or deposit banking, if they had truly believed the contracts to have been usurious. There may have been a kind of inculpable ignorance on the part of many which led them to regard the change in the form of the contract, and the fact that the profit was taken not from the poor but from successful businessmen or from States, as sufficient grounds for thinking that banking was not usury.

The Church allowed this “inculpable ignorance” to persist by persecuting pawnbrokers but not bankers.

*Period 4: 1350–1500.* The enforcement of the prohibitions was relaxed in a variety of ways. Professional usurers were allowed to partake in Church services and to be buried in Church graveyards.<sup>14</sup> Numerous types of loan contracts were explicitly declared non-usurious.<sup>15</sup> The sin of usury was increasingly applied only to excessive interest charges.<sup>16</sup> In the late 15th century the Church helped to create the *monti di pietà*—public pawnshops financed by charitable donations and run for the benefit of the urban poor. Interest charges were explicitly sanctioned in order to cover the cost of operation.

*Period 5: 1500–1600.* In the 16th century, “The Church reaffirmed its traditional doctrine on the matter of usury and reverted to the uncompromising attitude which had prevailed prior to the 15th century. The secular authorities, however reluctantly, continued to issue licences, but the Church henceforth refused to grant dispensation to the Lombards [professional pawnbrokers]. They were, and remained, excommunicated. According to Charles V’s ordinance of January 30, 1546 (n.s.), licenced usurers were forbidden to attend mass or to enter any church under the penalty of forfeiting their licences. The same prohibition applied to anyone who was in partnership with them, who owned a share in their *tables de prêt*, or who participated in their management.”<sup>17</sup>

*Period 6: 1600–1830.* Usury prohibitions came under constant theological attack within the Church. In 1830, “the Sacred Penitentiary issued instructions to confessors not to disturb penitents who lend money at the legal rate of interest.”<sup>18</sup> This is the effective end to usury prohibitions by the Catholic Church.

Consistency with the above chronology constitutes a minimum test for explanations of the Roman Catholic prohibitions. Why was usury a relatively unimportant issue for the Church before the 12th century? Why did the prohibition become most stringent in the late 13th and early 14th centuries in the form of zero interest and focused on consumption loans? Why did the Church relax enforcement of the prohibition in the 15th century? Why did the Church revert to pre-plague sanctions in the 16th century? Why did the Church end the prohibition in 1830?

<sup>14</sup> De Roover (1948, pp. 104–105, 151).

<sup>15</sup> Noonan (1957, pp. 154–170). De Roover (1955, p. 173) depicts this process as “a quagmire of contradictions.”

<sup>16</sup> De Roover (1948, pp. 104–105).

<sup>17</sup> De Roover (1948, p. 151). In 16th century England the hardening of religious and secular attitudes produced the usury statute of 1571.

<sup>18</sup> De Roover (1974, p. 321).

### 3. Usury and consumption smoothing

The fear of starvation in pre-industrial Europe was ever-present, with household incomes highly variable over time with a mean close to subsistence.<sup>19</sup> The 13th and early 14th centuries appear especially perilous. Phelps Brown and Hopkins (1956) document extremely low real wages for the period 1270–1350. The European-wide famine of 1315–1318 resulted in a 10–15% reduction of population in many villages.<sup>20</sup> Using 14th century data, McCloskey (1976) calculates that, on average, even relatively wealthy English peasants could expect to face “disaster” every 13 years. Yet starvation in the medical sense was relatively uncommon. Thus the Wrigley and Schofield (1981) paradox: for the early modern period in England, crisis years in grain production are poorly correlated with crisis years in mortality. Although studies of the 13th and early 14th centuries find some evidence of a positive relationship between poor harvests and mortality, the mystery of aggregate population increase and the relative absence of starvation remains.<sup>21</sup> These findings suggest the existence of effective methods of smoothing consumption in pre-industrial Europe.

The following mechanisms for consumption smoothing were available to households in pre-industrial Europe: (1) borrowing from manorial lords (in bad years rents could be lowered or forgiven entirely); (2) borrowing internally by consuming grain that normally would have been planted for next year’s crop; (3) selling or leasing land;<sup>22</sup> (4) storing grain; (5) scattering holdings;<sup>23</sup> (6) engaging in illegal activities—stealing, urban food riots, peasant insurrections;<sup>24</sup> (7) pooling incomes through the Church and through informal mechanisms supported by Church doctrine; (8) receiving charity directly and indirectly through the Church; (9) borrowing at positive interest rates in the private capital market. Households with significant landholdings could potentially use all of these mechanisms to avert starvation. In contrast, smallholders and wage laborers were forced to rely primarily on pooling, charity, and stealing to stay alive.

The Church in the Middle Ages shared attributes with the modern welfare state.<sup>25</sup> From Gilchrist (1969, pp. 78–79), “Almshouses, leper-houses. . . pilgrim centers. . . special provisions for education. . . the establishing of monastic hospitals. . . are signposts to a vast system of medieval poor-relief.” On the other hand, Dyer (1989, p. 252) finds

<sup>19</sup> See Geremek (1997, pp. 56–58, 122–124). From data on English wheat prices, Hoskins (1964, 1968) infers a major grain shortage once every six years (on average) between 1480 and 1759. Similar findings from real wage data are reported in Wrigley and Schofield (1981). But note that the survival problem for the wage earner was even more difficult than the one portrayed by real wage figures, which only reflect aggregate output shocks. In addition, the individual worker faced idiosyncratic shocks due to illness, injury, local crop failure, and unemployment.

<sup>20</sup> Jordan (1996).

<sup>21</sup> Dyer (1989, pp. 178–187, 270–171).

<sup>22</sup> Razi (1980) and Schofield (1997). Also see the discussion in Dyer (1989, pp. 123–127); Jordan (1996, pp. 102–6); Duby (1968, pp. 254–257); Bekar and Reed (2003).

<sup>23</sup> McCloskey (1976).

<sup>24</sup> van Leeuwen (2000, p. 16).

<sup>25</sup> For a list of public goods provided by the Church see Ekelund et al. (1996, pp. 25–29). For an analysis of the Church’s comparative advantage in income redistribution see Hull (1989).

that “Gifts were deployed inconsistently and unevenly, and the recipients were either not selected by need at all, or were chosen by rules that excluded many categories of poverty. The overall quantity of charity was low, whether measured as a proportion of the donors’ wealth, or in relation to the needs of the poor.” He concludes (p. 257), “The survival of the medieval poor still remains something of a mystery. Given the inadequacy of charitable institutions, the *networks of relatives and neighbors* must be assumed to have worked with some effect.” [emphasis added]<sup>26</sup>

We define informal pooling as the practice of giving and receiving through *networks of relatives and neighbors*, where future reciprocity is a reasonable expectation. In many instances these “networks” took the form of small scale, voluntary, fraternal organizations (Richardson, 1999). Formal pooling refers to the practice of contributing to the Church (or some other large institution) in good years with the assurance of receiving payments in bad years. Both types of pooling can be motivated in terms of consumption smoothing.<sup>27</sup> Charity refers to instances of gift giving in which reciprocity is not expected. Charity also exists in formal and informal pooling whenever pooling contributions result in a cross-subsidy from rich to poor.

The Church was the dominant instrument of formal pooling, via tithing and poor relief, throughout the Middle Ages. Pooling and charity were supported by Church doctrine which maintained that giving to the poor, either privately or through the Church, was pleasing to God. The poor “were valued by the rich, because alms-giving, an act of justice and mercy, wiped away sin” (Dyer, 1989, p. 235).

Church revenues derived principally from two sources: spiritual income (which included the tithe), and land income. Savin (1974) calculates that the spiritual income of monasteries accounted for only one-quarter of gross income in the early 16th century. The principal source of their wealth was land.<sup>28</sup> But Church landholdings were not independent of pooling/consumption smoothing. A social contract has been hypothesized for the Middle Ages in which feudal lords granted land to the Church with the expectation that the Church would maintain social order by guaranteeing sustenance to the poor. Some empirical support for the existence of the contract is provided in 16th century England when Henry VIII was able to take back Church land because of the perceived failure of the Church to fulfill its social obligations.<sup>29</sup>

<sup>26</sup> In discussing informal networks in preindustrial economies van Leeuwen (2000, p. 17) notes, “Old women or young girls looked after babies for a small fee or even without charge. A neighbor would run errands for an ill pauper; if a poor person had no food during a holiday, a neighbor would provide. Mutual help by neighbors, family, people from the same region, or workmates was a corollary of poverty, and not merely during the preindustrial era.” From Geremek (1997, p. 71), “Faced with this very real need, the need of the worker, both the medieval ethos of poverty and the system of alms distribution and hospital aid proved indifferent or, at best, inefficient. The poor relied on spontaneous acts of solidarity on the part of neighbors and family members, . . .”

<sup>27</sup> In a world of homogeneous agents, pooling is effective in smoothing individual consumption only in an environment of idiosyncratic shocks. In the context of aggregate shocks with heterogeneous agents, pooling can still be effective in increasing community survivability by transferring income from those above subsistence to those below. Our analysis includes both aspects of pooling.

<sup>28</sup> See Herlihy (1961) and Swanson (1989) for estimates of the size of Church landholdings.

<sup>29</sup> For a description and analysis see Clegg and Reed (1994).

Prior to the 12th century the private capital market was extremely limited. With the commercial revolution of the 12th and 13th centuries borrowing and lending increased significantly. The introduction of new business techniques and economic institutions caused transaction costs to fall dramatically, witnessed by the decline in interest rates on commercial loans (Homer and Sylla, 1996, pp. 136–143). Pawnshops dominated consumption lending in urban areas. The loans were for small amounts with very few outstanding for more than a year. The rural population tended to borrow from each other rather than from professional moneylenders.<sup>30</sup>

Clark's (1981, p. 267) study of rural debt for the years 1382–1490 finds that "...none of Writtle's borrowers appears to have stood among the poorer litigants identified in court rolls. Of these borrowers, 30% practiced a craft or a trade; 10% were substantial cultivators in possession of plows and draught animals. All participated actively in village life; 42% were creditors in their own right and 33% were involved in the land market... Lenders trusted people like themselves..." Similarly, Duby (1968, p. 253) observes that in 13th century France, loans to "those in the humblest positions...do not appear in any of the surviving documents." Botticini (2000) documents that in Tuscany, for the early 15th century, 55% of urban households borrowed money in the private credit market. Account records of Jewish money lenders indicate that borrowers were predominantly wealthy households<sup>31</sup>—95 percent of those borrowing from Jewish lenders owned land and the median wealth of households borrowing from Jews was 2.4 times that of non-borrowers.

Our reading of this data suggests that while the poor were not wholly excluded from the capital market, their access to it was inadequate relative to their needs.<sup>32</sup> The difficulty for the poor in securing consumption loans can be explained by two observations. The first is that the poor had little in the way of collateral.<sup>33</sup> The second is that their expected earnings (relative to subsistence) were insufficient to allow repayment of loans at existing interest rates. This last point can be illustrated with real wage data. Assume an optimistic scenario in which the average wage of unskilled labor was 10% above starvation, and workers never suffered from illness, injury, or unemployment.<sup>34</sup> Thus the only source of crisis could be a fall in the real wage more than 10% below its average level. The Phelps Brown and Hopkins (1956) data

<sup>30</sup> See De Roover (1948, p. 164).

<sup>31</sup> Fontaine (2001) documents similar findings for France in the 17th and 18th centuries.

<sup>32</sup> Geremek (1997, pp. 57–60) observes that at the end of the 13th century in many parts of Western Europe, over 90% of peasants fell into the categories of indigents/beggars, landless peasants, and owners of very small parcels of land (no animals). The survival of this population required significant consumption smoothing. Yet the data on lending show that the vast majority of consumption loans were to wealthier households.

<sup>33</sup> Hudson (1982, p. 27) lists the goods favored as collateral in pawnshops: "jewelry, gold and silver ware, pewter, saddlery, manuscripts and the more expensive kinds of textiles, and furs." The collateral actually used by the poor consisted of used clothing, tools, cutlery, and other items worth small sums of money. See Dyer (1989, pp. 178–182) for a discussion of the material possessions of the poor.

<sup>34</sup> Here unemployment includes limited work capacity constrained by nutrition. Fogel (1991, p. 46) reports that in 18th century France, for example, "the bottom 10% of the labor force lacked the energy for regular work, and the next 10% had enough energy for less than three hours of light work daily."



indicate that “starvation” wages are observed in 17 of the years from 1300 to 1347. In every instance the period of starvation wages lasted longer than one year, exceeding the duration of all but a few consumption loans. If the restriction on the term of loans is relaxed, only one period (1331/32) allowed the wage earner to both avert starvation and pay back the loan. In all other periods the loan could not have been repaid before the next period of starvation wages began.

#### 4. Usury prohibitions as a tie-in

The primary religious outputs produced by the medieval Church were salvation and consumption smoothing via pooling and charity. Church doctrine tied the purchase of salvation to pooling and charity. Usury prohibitions constituted an explicit negative tie-in between salvation and participation in the capital market. If parishioners chose to forego consumption smoothing via pooling and charity, and instead chose to smooth through lending/borrowing at interest, they were deprived of the possibility of salvation and denied the right to purchase the services necessary to attain salvation—for example, last rites, confession, and Christian burial.

Our analysis begins with the motivation of the Church. Standard tie-in analysis would have the Church tying salvation to consumption smoothing for the purpose of extracting uncaptured monopoly rents in salvation. But this approach to understanding the Roman Catholic prohibitions is implausible for at least three reasons. The usury tie-in was a central focus of the Church, but formal pooling accounted for only a small proportion of Church revenues. The purchase of salvation was coupled with *both* informal pooling/private charity outside the Church and formal pooling/charity through the Church—that is, the Church purposefully used its tie-in to increase revenues that it could not appropriate at the expense of revenues that it could. Changes in the tie-in over time appear unrelated to parameters relevant to monopoly exploitation.<sup>35</sup>

We hypothesize that the primary purpose of the usury tie-in was to generate improved consumption smoothing for the poor through tying salvation to pooling and charity while tying damnation to lending at interest. Consumption smoothing was essential for sustaining and increasing population levels and enhancing worker productivity. The Church benefited from increases in population and worker productivity for at least three reasons. First, the mission of the Church was to save souls and starving parishioners were limited in their capacity to attain salvation.<sup>36</sup> Second, depopulation and declining worker productivity lowered the value of Church landholdings, the primary source of Church wealth. Third, mass starvation increased the

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<sup>35</sup> For example, the population of the later Middle Ages faced exceptionally high probabilities of dying due to recurrent outbreaks of bubonic plague. The demand for salvation should have both increased and become more inelastic. A rent seeking argument would predict a strengthening of usury prohibitions; in fact they were relaxed.

<sup>36</sup> See Fogel (2000) for an analysis of the relationship between material comfort and spiritual effort in a contemporary context.

probability that the state or peasant uprisings would usurp Church income and property.<sup>37</sup> Population growth and worker productivity are connected to the usury tie-in through the impact of the capital market on consumption smoothing.

Consider first a world without a capital market. Let peasants hold enough land such that they can engage in land-related consumption smoothing. Let them purchase consumption smoothing through the Church (tithing in good years and receiving alms in bad years) and through informal pooling. Finally, let peasants contribute to and receive charity. Suppose that the consumption smoothing problem is solved in this environment.

Now introduce a capital market. The possibility of consumption lending/borrowing at interest entails an important relative price change leading to two substitution effects: the substitution of lending for charity, and the substitution of the capital market for informal pooling. Both can adversely affect community-wide consumption smoothing.<sup>38</sup> Both can be mitigated by usury prohibitions.

For a peasant in a surplus year, lending at interest to a credit worthy borrower is an alternative to giving to the poor. While charity increases rewards in Heaven, lending at interest increases material wealth in this lifetime. The emergence of a local credit market for consumption loans implies an expenditure shift out of charity into consumption lending. The usury tie-in reduces the size of this substitution effect.

The choice between the capital market and informal pooling for the purpose of consumption smoothing depends on their relative costs.<sup>39</sup> The costs of using the capital market are the transaction costs involved in contract negotiation and enforcement. The costs of using the informal pool are the networking costs associated with guaranteeing reciprocity. For wealthy agents the costs of informal pooling also include cross-subsidies to poor agents—costs that are avoided in the capital market. The defection of the rich to the capital market, and the loss of their cross subsidy to the poor, threatens the survivability of those remaining in the pool. Path dependencies can exist such that, if the scale of market transactions becomes large relative to reciprocal exchange, informal pooling could be driven out of existence altogether,

<sup>37</sup> A fear of peasant uprisings is noted by van Leeuwen (2000, p. 6) as one of the primary motivations for poor relief.

<sup>38</sup> But note that since usury prohibitions also reduced productive investment, it might be possible, from a dynamic perspective, for the positive “trickle down” effects of a more efficient credit market (on the growth of per capita incomes) to swamp negative impacts on the poor that arose from agents opting out of pooling and/or charity. Thus, a very liberal usury policy might eventually preclude the need for Church based consumption smoothing. On the other hand, the low overall potential for economic growth in the Middle Ages coupled with the urgency imposed by the subsistence constraint argue against this line of reasoning. We return to the issue in a later section (“Explaining The Chronology”).

<sup>39</sup> See Kranton (1996) for a general analysis of reciprocal exchange (also called gift exchange) and its interaction with market exchange. Kimball (1988) explores the specific application of gift exchange to insurance against consumption risk by medieval peasants. Assuming homogeneous agents and costless pooling, Kimball argues that “informal insurance” was an efficient form of risk reduction. The alternative of smoothing through the capital market is not explored. Coate and Ravallion (1993) apply reciprocal exchange to consumption smoothing in developing countries, but not in comparison to other forms of smoothing. These formal models of reciprocal exchange have been applied to theoretical environments of homogeneous agents who do not face a subsistence constraint.

even if it is more efficient (Kranton, 1996). Thus if only the poor are left in the informal pool, whose very existence is now fragile, their physical survival would often require assistance from the Church. Before comparing alternative forms of assistance, including usury prohibitions, that the Church might employ, we set out a formal model that details the theoretical relationship between the emergence of capital markets, starvation, and usury prohibitions.

Consider a society in which every agent has two potential income levels,  $y_H$  and  $y_L$ , with  $y_L < m < y_H$ , where  $m$  is the subsistence level of income below which an agent starves. There are two types of agents, rich and poor. In every period rich agents have  $\text{Prob}(y_H) = \pi_r$ , and poor agents have  $\text{Prob}(y_H) = \pi_p$  (with  $0 \leq \pi_p < \pi_r < 1$ ). The rich thus have a higher mean income and a lower probability of starvation than the poor. The fraction of rich people in the population is  $\alpha$ . We assume agent types are observable and that all agents are risk neutral, face independent income shocks, and use the same discount factor  $\delta \in (0, 1)$ .

Let the Church have lexicographic preferences. Its foremost goal is to keep all members of the population alive because this increases the value of Church lands and the number of souls that can be saved. Revenues are obtained by setting a price  $x$  that if paid in the current period by someone with income  $y_H$ , ensures salvation with probability one should the agent die before the start of the next period. An agent who does not pay  $x$  in a period where  $y_H$  occurs achieves salvation with some lower probability  $\lambda < 1$ . The value of  $\lambda$  depends on the teachings of the Church and the agent's degree of belief in those teachings. Salvation is worth  $S > 0$  when achieved, and an agent receives zero at death otherwise. An agent whose current income is  $y_L$  need not pay  $x$  to the Church, and automatically achieves salvation as long as  $x$  was paid in the past whenever  $y_H$  occurred.

Consider an agent, rich or poor, who never purchases a guarantee of salvation, receives no transfers through the Church, and does not participate in a capital market. The agent obtains

$$U^0 = \pi\{y_H - m + \delta[\theta U^0 + (1 - \theta)\lambda S]\} + (1 - \pi)\delta\lambda S,$$

where  $(1 - \theta)$  is the probability that the agent dies for reasons unrelated to starvation, such as disease, warfare, or old age. With probability  $\pi$  the agent has disposable income  $(y_H - m)$  in the current period after accounting for subsistence needs (which bring no direct utility) and survives into the following period with probability  $\theta$ . In this case  $U^0$  is received again due to stationarity. On the other hand the agent may die at the end of the current period and in this case gets salvation worth  $S$  with probability  $\lambda$  in the next period. With probability  $(1 - \pi)$  current income is  $y_L$  so the agent has no disposable income and dies of starvation, which again gives the discounted expected payoff  $\delta\lambda S$ . Solving for  $U^0$  yields

$$U^0 = [\pi(y_H - m) + (1 - \pi\theta)\delta\lambda S]/(1 - \delta\pi\theta).$$

Suppose the Church proposes the following redistribution scheme. It offers guaranteed salvation to agents with current incomes of  $y_H$  in exchange for a payment  $x$ ; agent types are observable so  $x$  may differ for rich and poor. The resulting revenue is used to bring agents with incomes of  $y_L$  up to the subsistence level  $m$ , ensuring their

survival. For simplicity pooling and charity are collapsed into payment  $x$ , which can be either paid to the Church or directly to those in need. The total revenue from this system is

$$R = [\alpha\pi_r x_r + (1 - \alpha)\pi_p x_p]N,$$

where  $N$  is population size,  $x_r$  is the fee paid by the rich and  $x_p$  is the fee paid by the poor. The total pay-out required to keep everyone alive is

$$C = (m - y_L)[\alpha(1 - \pi_r) + (1 - \alpha)(1 - \pi_p)]N.$$

If  $R \geq C$ , the redistribution scheme can be financed. We assume  $R < C$  if only the poor participate, even when all disposable income is paid into the redistribution pool (when  $x = y_H - m$ ). That is, if everyone is poor ( $\alpha = 0$ ),

$$(R - C)/N = (y_H - m)\pi_p - (m - y_L)(1 - \pi_p) < 0$$

and the Church cannot keep everyone alive.

An agent of type  $\pi$  who participates in the Church's scheme gets the present value

$$U^* = \pi\{y_H - m - x + \delta[\theta U^* + (1 - \theta)S]\} + (1 - \pi)\delta[\theta U^* + (1 - \theta)S].$$

This differs from  $U^0$  in two ways. First, whenever  $y_H$  is realized the agent pays  $x$  into the redistribution pool. If death occurs for an exogenous reason, the agent now gets  $S$  next period with certainty. Second, whenever  $y_L$  is realized the Church's redistribution scheme allows the agent to avoid starvation, which gives  $U^*$  next period if the agent survives and  $S$  otherwise. Solving for  $U^*$  yields

$$U^* = [\pi(y_H - m - x) + \delta(1 - \theta)S]/(1 - \theta\delta).$$

An agent of type  $\pi$  participates voluntarily in the Church's redistribution scheme if and only if  $U^* \geq U^0$ , which holds as long as the fee  $x$  is not too large

$$x \leq \{(y_H - m)\pi(1 - \pi)\delta\theta + \delta S[(1 - \theta)(1 - \pi\delta\theta) - \lambda(1 - \pi\theta)(1 - \delta\theta)]\}/\pi(1 - \pi\delta\theta).$$

Define

$$x^0(\pi) \equiv \{(y_H - m)\pi(1 - \pi)\delta\theta + \delta S[(1 - \theta)(1 - \pi\delta\theta) - \lambda(1 - \pi\theta)(1 - \delta\theta)]\}/\pi(1 - \pi\delta\theta),$$

where  $x^0(\pi)$  is the maximum price an agent of type  $\pi$  would be willing to pay for a guarantee of salvation in the absence of a capital market. Note  $x^0(\pi) \geq 0$  for all values of  $\lambda$  if  $x^0(\pi) \geq 0$  when  $\lambda = 1$ ; this requires that  $\pi_r(y_H - m) \geq (1 - \delta)S$ . This latter requirement holds under the weak assumption that if the Church charges no fee ( $x = 0$ ) for consumption smoothing,  $U^* \geq S$  holds. That is, continued life when consumption smoothing is available for free is at least as good as death, even if death brings salvation for sure. The physical upper bound on  $x$  is  $(y_H - m)$  because any larger fee would drive an agent below subsistence. The Church must leave agents with some disposable income in the good state of the world if  $x^0(\pi) < y_H - m$ , which is true as long as  $U^* < U^0$  holds at  $x = y_H - m$ . This implies that the higher

probability of salvation under the Church's scheme is insufficient to compensate agents for spending a lifetime with no prospect of income above subsistence.

We assume that if everyone pays the maximum feasible fee  $x^0(\pi)$  for their type, the Church will be able to finance its redistribution activities ( $R \geq C$ ). For simplicity we also assume that the Church always charges the rich  $x^0(\pi_r)$ . However, the Church may charge a price below  $x^0(\pi_p)$  for the poor if it would otherwise generate excess revenue ( $R > C$ ).

Now suppose the rich have access to a competitive capital market. Since everyone is risk neutral and there is complete information, it is always possible to borrow on terms that leave the present value of the lender's net wealth unchanged. In particular, a person of type  $\pi$  who has accumulated debt  $D$  at the beginning of the current period can offer the following contract to lenders: if the state of the world turns out to be bad this period, the lender will provide a new loan in the amount  $(m - y_L)$  which keeps the agent from starving; if the state of the world is good this period, there is no new loan or debt repayment and the debtor simply enjoys disposable income  $(y_H - m)$ . Assuming the agent survives to next period the borrower will have the new debt  $D'$  regardless of which state occurs. Debt thus accumulates deterministically over time.

As long as the present value of the debtor's wealth is large enough to cover the larger debt  $D'$ , risk neutral lenders are indifferent toward such contracts when  $D = -(1 - \pi)(m - y_L) + \delta\theta D'$ . The maximum debt load is reached when all disposable income in good states must be used for debt repayment, assuming the lender keeps the borrower from starving in bad states. This maximum is given by the expected present value of discounted future income

$$D_{\max} = [\pi(y_H - m) - (1 - \pi)(m - y_L)] / (1 - \delta\theta),$$

where the discounting reflects the possibility that the agent may die for exogenous reasons before the debt is paid off. From our earlier assumption that the Church cannot finance its redistribution scheme if everyone is poor,  $D_{\max}$  must be negative for the poor. Poor agents cannot accumulate debt since the net present value of their income stream is negative; only the rich can participate in the capital market.

By borrowing enough to remain at the subsistence level in bad states of the world, and postponing debt repayment until  $D_{\max}$  is reached, a rich agent is assured of never starving. If such an agent spends nothing on salvation, begins with no initial debt, withdraws from the Church's redistribution scheme, and relies on the capital market for consumption smoothing, their expected utility is

$$U^1 = \pi_r \{y_H - m + \delta[\theta U^1 + (1 - \theta)\lambda S]\} + (1 - \pi_r)\delta[\theta U^1 + (1 - \theta)\lambda S].$$

Lending and borrowing need not be included explicitly. A competitive capital market ensures that credit transactions leave the present value of expected incomes for the rich unchanged.  $U^1$  differs from  $U^0$  since agents no longer starve in bad income states; they thus survive to the next period with probability  $\theta$  just as if the good state had occurred. The solution for  $U^1$  is

$$U^1 = [\pi_r(y_H - m) + \delta(1 - \theta)\lambda S] / (1 - \delta\theta).$$

It can be shown that  $U^1 > U^0$  if and only if  $\pi_r(y_H - m) > (1 - \delta)\lambda S$ . This is true if  $U^1 > \lambda S$ . Thus, as long as the rich prefer to continue living, the present value they can obtain by withdrawing from the Church's redistribution scheme is greater when a capital market is available than when it is not. The reason is straightforward. A capital market allows rich agents to avoid starvation when the expected present value of their income is positive.

Because the outside option of a rich person is more attractive when a capital market exists, the maximum price the Church can charge the rich for guaranteed salvation must be lower in this case. The rich now participate in the Church's system if  $U^* \geq U^1$  which yields

$$x \leq \delta(1 - \theta)(1 - \lambda)S/\pi_r \equiv x^1(\pi_r).$$

It can be shown that  $x^1(\pi_r) < x^0(\pi_r)$  if and only if  $\pi_r(y_H - m) > (1 - \delta)\lambda S$ . This is the same condition that was used above to establish  $U^1 > U^0$ , namely that the rich prefer continued life over immediate death. Thus under quite general conditions the Church can raise less revenue from the rich when they have access to a competitive capital market than when they do not. The derivation of  $x^1(\pi_r)$  and  $x^0(\pi_r)$  directly corresponds to the deleterious effects on pooling and charity associated with the emergence of a capital market previously set out in our narrative exposition.

Assume that with the price of salvation set at its maximum feasible level for both poor and rich, the emergence of a market for consumption loans results in  $R < C$ . One response of the Church could be to impose usury prohibitions thereby lowering  $\lambda$  to  $\lambda_u$ . Recall that  $\lambda$  is the probability that an agent will achieve salvation even if the agent does not contribute to the Church's redistribution scheme. The rhetoric of usury prohibitions asserted that agents who rejected the Church's scheme and instead smoothed consumption through the capital market would experience hell for eternity with certainty. Thus  $\lambda_u = 0$  for a true believer. Substituting  $\lambda_u < \lambda$  into the equations above yields the desired result that  $x^1(\pi_r)$  increases,  $U^*$  increases relative to  $U^1$ , and  $R$  relative to  $C$ .

## 5. Alternative strategies to prevent starvation

Consider four potential responses by the Church to a capital market induced breakdown in traditional consumption smoothing arrangements. (1) The Church could increase direct payments to the poor. In addition to depleting Church coffers, this choice was burdened with agency problems within the Church,<sup>40</sup> the difficulty of identifying needy parishioners (adverse selection),<sup>41</sup> and induced risky behavior among parishioners (moral hazard). (2) The Church could allow

<sup>40</sup> Church officials had a private incentive to appropriate for their personal use donations meant for the poor. For evidence of malfeasance see Snape (1968), Tate (1969), Savin (1974), and Dyer (1989).

<sup>41</sup> Dyer (1989, ch. 9).

some parishioners to starve. As noted above, this choice entailed negative consequences for the Church's mission and land revenues. (3) The Church could impose a tying relationship between salvation and pricing/distribution behavior in grain markets characterized by large productivity shocks and imperfect competition.<sup>42</sup> The disadvantages of this choice include its probable ineffectiveness in redistributing food to the poor<sup>43</sup> and its high cost to the Church as a major grain producer. (4) Although imposing usury prohibitions was also costly, the Church could lessen the role of the private capital market as an instrument of consumption smoothing by preaching that the practice of usury was the "death of the soul."

We adopt the least restrictive assumption with respect to cost minimization (per unit of starvation avoidance); that it was characterized by an interior solution. In response to threats to population levels through starvation, the Church adjusted on all four margins. As a matter of logic, this is all that is required to make the case for the usury tie-in. In actual fact, we expect that the Church biased its response in favor of usury prohibitions for the following reasons. Theoretical and simulation analyses have shown pooling to be an extremely efficient consumption smoothing device for medieval peasants.<sup>44</sup> Peer review by fraternal organizations is a central feature of private charity and informal pooling (in contrast to redistribution/smoothing undertaken by large institutions), and recent research demonstrates, in a variety of historical settings, the advantages of peer review for efficient smoothing, especially for the poor.<sup>45</sup> There existed a reinforcing complementarity between informal pooling and charity. A fundamental problem for agents wishing to borrow in an environment of reciprocal exchange is to convince lenders that reciprocity will be forthcoming in the future. This problem can be solved by investing in a reputation as a person who helps those in need. Giving to charity is one way to establish such a reputation.<sup>46</sup> In our context, donating to charity is equivalent to posting a bond. Failing to reciprocate in the informal pool would cause an agent to lose the value of his/her reputation (brand name).<sup>47</sup> The corresponding bond required in the capital market is physical collateral. While reputation is also important in the capital market, it is not enhanced by giving to the poor.

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<sup>42</sup> The "Just Price Doctrine" can be viewed as such an attempt. For a description see Viner (1978, pp. 81–85) and De Roover (1958).

<sup>43</sup> See Neilson (1997) for an analysis of direct government intervention in grain markets for the purpose of "the relief of dearth" during the early modern period.

<sup>44</sup> Kimball (1988), Bekar (1999), Bekar and Reed (2003).

<sup>45</sup> See for example Emery (1996), and Banerjee et al. (1994).

<sup>46</sup> For a related argument see van Leeuwen (2000, pp. 8–12).

<sup>47</sup> This argument is an application of analysis found in Klein and Leffler (1981) who investigate the interaction between bond posting and reputation building in an environment in which agents must purchase goods before they can ascertain product quality. An implication of their analysis is that agents will post bonds in the form of hostage capital. In our application, charity meets this requirement because the permanently poor, by definition, can never reciprocate.

## 6. Explaining the chronology of Roman Catholic prohibitions

Let the Church's objective be to maximize the net benefits from usury prohibitions by equating their marginal benefit with their marginal cost. To generate comparative static results, the effect of historical parameters on these benefits and costs need to be explored. We view five parameters as historically determining: transaction costs in the capital market, the distribution of land holdings, the means and variances of incomes, income inequality, and the role of government and other secular institutions in providing consumption smoothing.

The effect of transaction costs on usury prohibitions depends on the level of these costs. Very high transaction costs rule out the capital market as a consumption smoothing alternative. The benefit to the Church of increasing the costs even further is negligible and we expect the absence of usury prohibitions. Moderate transaction costs imply that consumption loans would be characterized by relatively high interest rates and significant collateral. This is the worst case for the poor and we expect the Church to respond with usury prohibitions. Low transaction costs imply low interest rates and thereby raise the possibility of loans to the poor. The incentive for the Church to impose prohibitions is diminished.

Landholding allows for a high degree of consumption smoothing. Thus when a small proportion of the population holds land, consumption smoothing through pooling and charity becomes more critical for survival, and we expect the Church to strengthen usury prohibitions.

Falling mean income and a constant or increasing variability of income implies an increasing probability of starvation. Increased contributions to the informal pool are required to compensate if population levels are to remain unaffected. Thus the Church should intensify usury prohibitions in an effort to shift wealthy households out of the capital market and into the informal pool.<sup>48</sup>

The greater income inequality, the larger the subsidy from rich to poor that is required to sustain economy-wide consumption smoothing. Charity and informal pooling are primary sources of income redistribution. But since increased transfers make the informal pool less attractive to the wealthy, they are motivated to defect into the capital market, where cross subsidies are absent. The Church should increase usury prohibitions to halt this defection.

When the state provides welfare to the poor, or when private insurance against consumption risk becomes generally available, the Church has less of an incentive to provide consumption smoothing and the rationale for usury policies disappear.

Below we show consistency between these predictions and the chronology of Roman Catholic prohibitions. Table 1 summarizes critical parameters in our analysis.

Our model provides new answers to the questions we raised earlier.

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<sup>48</sup> Note that with increasing variance in incomes there may be an endogenous shift into informal pooling as the repayment risk on consumption loans increases and access to lenders declines. The larger is this endogenous shift, the smaller is the anticipated response from the Church.



Table 1  
Explaining the chronology of usury prohibitions

Time period	Distribution of land	Population trends, real wages	Alternatives to charity and informal pooling	Usury restrictions
1. Pre-12th century	More equal	Rising, flat	None	Weak restrictions, applied to clerics
2. 13–14th century	Less equal	Rising, falling	Capital market	Strong restrictions, applied to all
3. 14–15th century	More equal	Falling, rising	Capital market	Restrictions weakened, <i>montis</i> established
4. 16th century	Less equal	Rising, falling	Capital market	Return to strong restrictions
5. 17–20th century	Less equal	Rising, rising	Capital market, state	Restrictions abandoned

*Why was usury a relatively unimportant issue for the Church before the 12th century?* The inefficiency of the private capital market made it a high cost alternative to informal pooling, most of the population in the 10th and 11th centuries held land,<sup>49</sup> and the relative homogeneity of incomes minimized cross subsidization problems in pooling.

*Why did the prohibition peak in the late 13th and early 14th centuries?* The commercial revolution of the 12th and 13th centuries increased the efficiency of the private capital market, the percentage of the population in the small holder/low wage earner categories increased dramatically,<sup>50</sup> and increasing population levels gave rise to the cultivation of marginal lands causing lower means and higher variances in agricultural output.<sup>51</sup>

*Why did the Church relax enforcement of the prohibition in the 15th century?* Average landholdings increased<sup>52</sup> and the variance of output decreased as grain production was concentrated on better land.<sup>53</sup>

<sup>49</sup> For example, at the end of the 11th century in England, only 10% of the rural population were landless peasants, and they were full-time workers on the land of their manorial lord. Thirty-two percent were smallholders (holding 5% of the land). The rest (58%) were sufficiently large landholders to allow full time work on their own land. Twenty-eight percent of the rural population held enough land (30 acres or above) to require seasonal wage labor to supplement household labor. See Miller and Hatcher (1978, p. 22).

<sup>50</sup> Postan (1966, p. 619) finds that in England, by the 13th century, one half of the adult population had no land at all; 45% of holdings averaged less than three acres; 22% of the tenants held an average of 30 acres. Over the 13th century the percentage of small holders continued to increase—see Dyer (1989, pp. 124–125). For similar findings on the Continent see Geremek (1997, pp. 56–58) and Duby (1968, pp. 282–285).

<sup>51</sup> Because of the paucity of data on grain outputs, price data have traditionally been used as a proxy measure for the variability of harvests. In England “grain prices fluctuated by an average of 26.6% from one year to the next” for the period 1280–1350, but only 11.5% between 1440 and 1500—see Baily (1988, p. 235).

<sup>52</sup> For England, Dyer (1989, pp. 141–142) cites the examples of two representative villages. In Holywell in 1252, 64% of holdings were less than 10 acres. In 1451, the percentage had fallen to 41%. In Stoughton in 1341, 52% of the holdings were 11 acres or less. By 1477 the percentage had fallen to 16%, with 58% of the holdings larger than 30 acres. For Continental examples see Duby (1968, p. 339).

<sup>53</sup> See Footnote 51.

*Why did the Church revert to pre-plague sanctions in the 16th century?* The capital market became more efficient,<sup>54</sup> a growing proportion of the population became small holders or landless peasants, and increasing poverty followed in the wake of renewed population growth.<sup>55</sup>

*Why did the Church end the prohibition in 1830?* New technology and increased investment in agriculture resulted in increasing outputs with lower variance,<sup>56</sup> the state took on more of the responsibility for poor relief in the form of poor law legislation,<sup>57</sup> and innovations occurred in private insurance that reduced the need for Church related consumption smoothing.<sup>58</sup>

*Why did the Church choose zero as the only acceptable interest rate during the period of peak prohibitions?* Given the extreme poverty levels in the 13th and early 14th centuries, the Church was particularly intent on expanding the number of people in the formal and informal redistribution pools and increasing charitable donations. A zero interest rate minimized the attraction of the capital market alternative.

Of course a zero nominal rate of interest was not always optimal from a narrow perspective of equating the marginal benefits of prohibitions to their marginal costs. The 'optimal' rate would change from year to year depending on movements in the price level,<sup>59</sup> and the perceived benefits and costs of usury. The Church, however, was required to justify usury prohibitions by reference to natural law. Under these circumstances, it would have been difficult to maintain an argument for a non-zero nominal interest rate that fluctuates through time. It would also have been more difficult to detect usury violations if the target interest rate was constantly changing. The demand for zero interest on consumption loans is consistent with a broader calculus that includes the costs of both 'selling' the argument for usury prohibitions and enforcing the prohibitions.

*Why did the prohibition target consumption loans?* Although Church doctrine stressed the spiritual dangers of excessive wealth, the Church stopped short of severe sanctions on investment lending, allowing numerous means through which capital market transactions in investment loans could evade usury restrictions. Compared to the case of consumption loans, vigorous persecution of investment loans involved lower benefits and higher costs.

At the village level, the potential for consumption loans was larger than for investment loans: large-scale investment loans were made by merchant bankers in capital markets inaccessible to villagers. Consumption lending/borrowing in the capital market is clearly a substitute for lending/borrowing in the informal pool—they are

<sup>54</sup> See Homer and Sylla (1996, p. 120) for interest rate data.

<sup>55</sup> In general, the economies of Western Europe returned to conditions similar to those in the 13th and early 14th centuries. See Geremek (1997, pp. 92–141).

<sup>56</sup> See McCloskey (1975) for a discussion of the implications of innovations in agriculture (originating on the Continent and diffused to England) for risk reduction. Also see Allen (1994).

<sup>57</sup> King (1997).

<sup>58</sup> Pearson (1997).

<sup>59</sup> The price level matters because deterrence from entering the capital market depended on setting the real (rather than the nominal) rate of interest at zero.

alternative methods of consumption smoothing.<sup>60</sup> The relationship between investment loans and charity/informal pooling is less clear.

Usury restrictions on investment lending imply lower levels of investment, a lower stock of capital,<sup>61</sup> and therefore lower rates of growth. In a dynamic model this could lead to depressed mean incomes, less charity, and an increased demand for consumption smoothing. By prosecuting consumption loans and not investment loans, the Church avoided the worst effects of inefficient capital markets while facilitating consumption smoothing. Finally, the Church would have found it extremely costly to persecute merchant bankers—the Church’s “most trusted emissaries and...highest dignitaries” as well as important sources of financial and political support.<sup>62</sup>

Why then did Church rhetoric against usury fail to differentiate between consumption and investment lending? Our answer, in part, invokes the argument used above to explain the insistence on a zero nominal rate of interest. The Church was constrained to argue from the basis of natural law, which made it difficult to draw a credible distinction between consumption and investment lending.<sup>63</sup> A further rationale follows from our general contention that the primary motivation for the Church, with respect to usury laws, was concern for the poor. Church doctrine simultaneously offered salvation in exchange for charity and damnation in return for usury. Yet loopholes were offered for investment lending. The result was that merchants and bankers who engaged in investment financing (at interest) were strongly motivated to offset the damnation effect of this activity with compensating contributions to charity.<sup>64</sup> Allowing investment lenders a clear conscience with respect to usury would have negated this result.

## 7. Concluding remarks

The Roman Catholic Church benefited from keeping the population alive and productive, which in turn depended on economy-wide consumption smoothing. We contend that, from the perspective of the Church, efficient consumption smoothing for the poor required extensive charity and informal pooling. The existence of a

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<sup>60</sup> For a discussion of the general view that communities of informal exchange networks and markets may act as substitutes, see Greif (1997). For an application of this idea in a different historical context, see Greif (1993, 1994).

<sup>61</sup> Note that the capital stock includes publicly financed investments. For analysis of the impact of usury on public finance in the Middle Ages see Munro (2001).

<sup>62</sup> Noonan (1957, p. 14).

<sup>63</sup> Jones (1989) for example notes that the English debates preceding the 1571 Act Against Usury struggled over how this distinction could be made and supported.

<sup>64</sup> From Geremek (1997, p. 23) “Charity, in the form of alms-giving and donations to the Church was presented as a way of redeeming one’s sins in this world, and was to be practiced constantly. It was the solemn duty of those who exercised power...and of those involved in lucrative activities, especially activities of a morally dubious nature, such as money-lending.” See Galassi (1992) for confirming empirical support.

private capital market in consumption loans threatened both. Usury prohibitions served to re-direct funds from interest earning consumption loans (to the relatively well-off) into informal pooling and charity. Informal pooling benefited the poor in several ways. It included them in a redistribution pool characterized by cross-subsidies from the rich. The reputation building aspects of informal pooling promoted private charity.

Our model is consistent with the broad features of the Roman Catholic chronology of usury prohibitions. While any analysis encompassing phenomena over centuries must be viewed with caution, we feel that our proposed linkage of usury prohibitions to pooling and charity offers a promising approach to understanding the motivation for the prohibitions and variations over time in their enforcement. The application of our hypothesis to other cases of religious prohibitions against usury is a topic for further research.

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